

REMARKS/ARGUMENTS

Favorable consideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 2-6 and 8-12 are pending, with Claims 1 and 7 cancelled and Claims 2-6 and 8-12 amended by the present amendment.

In the Official Action, Claims 1 and 7 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kerfoot et al. (U.S. Patent No. 6,704,511, hereinafter “Kerfoot”); and Claims 2, 4, 8 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kerfoot; Claims 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kerfoot in view of Alphonsus et al. (U.S. Patent No. 5,764,405, hereinafter “Alphonsus”); and Claims 6 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kerfoot in view of Mathis (U.S. Patent No. 4,726,444). The Official Action is unclear as to the status of Claims 3 and 9. Applicants interpret the Official Action as reporting that Claims 3 and 9 were rejected under 35 U.S.C. § 102(e) as being anticipated by Kerfoot.

Claims 3-4 and 9-10 are amended to recite the features of cancelled Claims 1 and 7, along with the additional feature of the band pass filtering means including a first and second plurality of band pass filters connected to a corresponding first and second optical amplifier. Support for this additional feature is found in Applicants’ originally filed Figure 7. No new matter is added.

Briefly recapitulating, Claim 3 is directed to a wavelength division multiplexing and optical transmission apparatus. The apparatus includes a) a plurality of optical transmitting units for modulating a plurality of laser signals having inherent wavelengths with a plurality of data signals and outputting a plurality of modulated optical signals; b) optical amplifying means with non-input and for outputting an amplified spontaneous emission light signal; c) band pass filtering means for band pass filtering the output of the optical amplifying means

and outputting a non-modulated spectrum slice optical signal; and d) optical multiplexing means for multiplexing the non-modulated spectrum slice optical signal as a dummy signal of an optical signal to be added in the future with the modulated optical signals and transmitting a multiplexed optical signal. The band pass filtering means includes a first and second plurality of band pass filters connected to a corresponding first and second optical amplifier. The optical amplifying means includes a single optical amplifier which has a signal input terminal terminated at no reflection. The band pass filtering means includes a light dividing element for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals, and a plurality of optical band pass filters, connected to a plurality of divided output terminals of the light dividing element respectively, for outputting the non-modulated spectrum slice optical signal. Applicants claimed invention allows for improved flexibility in adding and dropping channels in an optical communications network.

Kerfoot describes a wavelength division multiplex optical signal including a WDM combiner to provide a source signal, at least one transmitter coupled to an input of the WDM combiner, a broadband noise source, and a filter coupled between the broadband noise source and another input of the WDM combiner in one embodiment, the filter is an optical notch filter. In another embodiment the filter includes a WDM demultiplexer coupled through plural filters to provide a plurality of noise signals and a WDM multiplexer coupled through at least one filter of the plural filters to respective noise signals.¹

In Kerfoot, head end 130 provides a source signal that combines information signals and filtered noise signals. Information signals come from one or more transmitters 150. At the same time, filtered noise signals come from noise source 138 through filter circuitry 140. The filter blocks optical signals at wavelengths that correspond to the wavelengths of the

¹ Kerfoot, Abstract.

information signals from the transmitters 150 so noise is not added to the desired information signals. However, the filter passes optical signals (e.g., noise signals from broadband noise source 138) at wavelengths not within the stop band. By loading unused channels (called idler channels) with noise channels, the information signals on the used channels will not draw all of the power from optically pumped fiber amplifiers in repeaters 110. Instead, the noise signals carried to the idler channels will draw their proportionate share of the repeaters power as if they were information signals. In this way, all WDM channels will appear to be fully loaded from their initial operation. Even some of the channels are loaded with noise. As more capacity is needed from network 100, additional transmitters 150 are added and filter circuitry 150 is modified or replaced so as to block optical signals at the wavelengths of the information signals provided by transmitters 150.²

Kerfoot does not, however, disclose or suggest an optical amplifying means including at least two optical amplifiers and a band pass filtering means including a first and second plurality of band pass filters connected to a corresponding first and second optical amplifier.

MPEP § 2131 notes that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). See also MPEP § 2131.02. “The identical invention must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Because Kerfoot does not disclose or suggest all the features recited in Claims 3-4 and 9-10, Kerfoot does not anticipate the invention recited in Claims 3-4 and 9-10, and all claims depending therefrom.

Alphonsus discloses a redundant TTE optical transmission system which eliminates signal power loss due to protection elements and thus provides a system power budget

² Kerfoot, column 4, lines 16-42.

comparable to non-redundant TTE systems. In one embodiment, Alphonsus discloses the use of two sets of associated pump lasers 50 in an optical amplifier 30. With redundant pumps, the optical amplifier 30 does not fail when one of the pumps 50 fails. Thus, optical amplifier 30 failure is limited to the circumstance where both sets of laser pumps 50 are inoperative simultaneously.³

Mathis describes a fiber optic data bus that includes a multiplexer for generating a plurality of optical signals for intensity modulating each of the optical signals in response to a respective one of a plurality of input RF signals, each at a different RF carrier frequency, to provide a plurality of intensity modulated optical signals.⁴ Figure 13 of Mathis illustrates a pass band response of a single filter and of two cascaded filters. Figure 13(a) illustrates a response in output power versus frequency when the filter is tuned with a resonant carrier frequency of 1.94 GHz. Figure 13(b) illustrates the two cascaded filter response of output power versus frequency when each filter is tuned to 1.9 GHz. In comparing Figs. 13(a) and 13(b) it can be seen that a sharper attenuation (i.e., narrow pass band) is achieved with the cascaded filters.⁵

MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Without addressing the first two prongs of the test of

³ Alphonsus, col. 4, lines 20-32.

⁴ Mathis, Abstract.

⁵ Mathis, col. 9, lines 44-61.

obviousness, Applicants submit that Applicants' amended claims are not obvious *prima facie* because Kerfoot, Alphonsus and Mathis fail to disclose all the features of Applicants' claimed invention.

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Attorney of Record
Registration No. 28,870

Michael E. Monaco
Registration No. 52,041

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

I:\ATTY\MM\AMENDMENT0057\220800US AMENDMENT 5-2-06.DOC